Owner's Manual

Evolution Series

650D

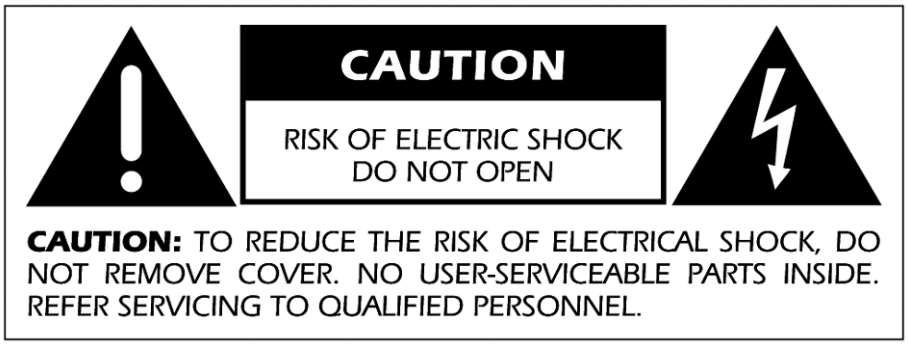
DAC / CD Transport

MOON

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or another apparatus that produces heat.
9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for safety. If the provided plug does not fit into the outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. Unplug mains cord during transportation.
11. Only use attachments and accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power cord or plug has been damaged; liquid has been spilled or objects have fallen into the apparatus; or the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. No naked flame sources, such as candles, should be placed on the apparatus.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

Important Safety Instructions (cont'd)

The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Marking by the "CE" symbol (shown left) indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community

Please read all instructions and precautions carefully and completely before operating your Simaudio MOON 650D Digital-to-Analog Converter/Transport.

1. **ALWAYS** disconnect your entire system from the AC mains before connecting or disconnecting any cables, or when cleaning any component. To completely disconnect this apparatus from the AC mains, disconnect the power suppy cord plug from the AC receptacle.
2. The MOON 650D must be terminated with a three-conductor AC mains power cord w which includes a protective earthing connection. To prevent shock hazard, all three connections must **ALWAYS** be used. Connect the MOON 650D only to an AC source of the proper voltage; Both the shipping box and rear panel serial number label will indicate the correct voltage. Use of any other voltage will likely damage the unit and void the warranty
3. AC extension cords are **NOT** recommended for use with this product. The mains plug of the power supply cord shall remain readily accessible.
4. **NEVER** use flammable or combustible chemicals for cleaning audio components.
5. **NEVER** operate the MOON 650D with any covers removed. There are no user-serviceable parts inside. An open unit, especially if it is still connected to an AC source, presents a potentially lethal shock hazard. Refer all questions to authorized service personnel only.
6. **NEVER** wet the inside of the MOON 650D with any liquid. If a liquid substance does enter your MOON 650D, immediately disconnect it from AC mains and take it to your MOON dealer for a complete check-up.
7. **NEVER** expose the MOON 650D to dripping or splashing of liquids and no objects filled with liquids, such as vases, shall be placed on top.
8. **NEVER** block air flow through ventilation slots or heatsinks.
9. **NEVER** bypass any fuse.
10. **NEVER** replace any fuse with a value or type other than those specified
11. **NEVER** attempt to repair the MOON 650D. If a problem occurs contact your MOON dealer.
12. **NEVER** expose the MOON 650D to extremely high or low temperatures.
13. **NEVER** operate the MOON 650D in an explosive atmosphere.
14. **ALWAYS** keep electrical equipment out of reach of children.
15. **ALWAYS** unplug sensitive electronic equipment during lightning storms.
16. **WARNING:** Do not expose batteries or battery pack to excessive heat such as sunshine, or fire or the like.

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Date Code: 20140909

Introduction

Thank you for selecting the **MOON 650D** Digital-to-Analog Converter / CD Transport as a part of your music/cinema system. This preamplifier has been designed to offer state-of-the-art high-end performance in an elegant package, while retaining all the sonic hallmarks on which Simaudio has made its reputation. We have spared no effort to ensure that it is the finest DAC / CD Transport available. We have been building high-performance audio equipment for over 30 years, and the know-how gained through our cumulative experience is an important reason why **MOON** preamplifiers are so musically satisfying.

The performance of your **650D** will continue to improve during the first 400 hours of listening. This is the result of a "break-in" period required for the numerous high quality electronic parts used throughout this preamplifier.

Before setting up your new **MOON 650D**, we encourage you to please read this manual thoroughly to properly acquaint yourself with its features. We hope you enjoy listening to the **MOON 650D** DAC / CD Transport as much as the pride we have taken in creating this fine audio product. We understand the power and emotion of music and build our products with the goal of faithfully capturing these elusive qualities.

The information contained in this manual is subject to change without notice. The most current version of this manual is available on our official website at www.simaudio.com

Your **MOON 650D** DAC / CD Transport incorporates many innovative significant design features to achieve its "world class" level of performance. This is an abbreviated list of the more important features:

ESS Technology **SABRE^{32} Ultra DAC/Digital Filter** (ES9016) working in **32-bit Hyperstream™** to achieve unprecedented jitter immunity and low-level linearity via a patented **Time Domain Jitter Eliminator.**

Digital Audio Signal Processing using **M-AJiC32** (MOON Asynchronous Jitter Control in 32-bit mode).

Proprietary CD drive system mounted on our **M-Quattro** gel-based 4-point floating suspension for vibration damping, allowing ambient and spatial cues in your recordings to come to life like never before.

Full unsolicited **RS-232** bidirectional feedback.

SimLink™ controller port allows for 2-way communications between other MOON Evolution Series components.

Four (4) digital inputs (AES/EBU, S/PDIF, TosLink and USB) allowing for a connection to virtually any digital source.

Two (2) digital outputs – AES/EBU and S/PDIF.

Separate digital and analog power supplies, each with their own toroidal transformer.

A **virtually jitter-free digital clocking** system.

Power supply voltage regulation includes **i^{2}DCf** (Independent Inductive DC Filtering); 1 inductor for each and every chip (i.e. OpAmp, DAC, Digital Filter, etc.) in the audio circuit's signal path – **18 stages in all**.

Optional **external** power supply.

Ultra rigid chassis construction to minimize the effects of external vibrations.

Unpacking

The **MOON 650D** DAC / CD Transport should be removed from its box with care.

The following accessories should be included inside the box with your Digital-to-Analog Converter / CD Transport:

- ✓ *AC power cable*
- ✓ *'FRM-3' remote control with three 'AAA' batteries (USA and Canada only)*
- ✓ *'SimLink' cable with 1/8" mini plug terminations on each end*
- ✓ *This owner's manual*
- ✓ *Warranty and product registration information (USA and Canada only)*

Once the **650D** is unpacked, inspect it thoroughly and report any damage to your dealer immediately. We suggest that you keep all of the original packaging, storing it in a safe, dry place in case you're required to transport this product. The customized packaging is specially designed to protect the **650D** from any potential damage during transit.

Please write the serial number of your new **MOON 650D** in the space provided below for future reference.

Serial No.: _____

Installation & Placement

The **MOON 650D** DAC / CD Transport should be placed on a solid, level surface. You should avoid placing it near a heat source or inside a closed cabinet that is not well ventilated as this could compromise the preamplifier's performance and reliability.

If the surface you have chosen isn't perfectly level, each of the four (4) legs of your **650D** are height adjustable; carefully using your fingers, you can either raise each leg by turning the cone underneath clockwise, or lower each leg by turning it counterclockwise.

We strongly recommend that you leave these cones mounted to the component at all times for reasons related to both performance and aesthetics.

If you intend to use the 650D's USB input connection with a Windows-based computer, you will need to install our USB HD driver, which can be downloaded from the support section of our website. **Note: Apple-based computers don't require this driver.**

Front Panel Controls

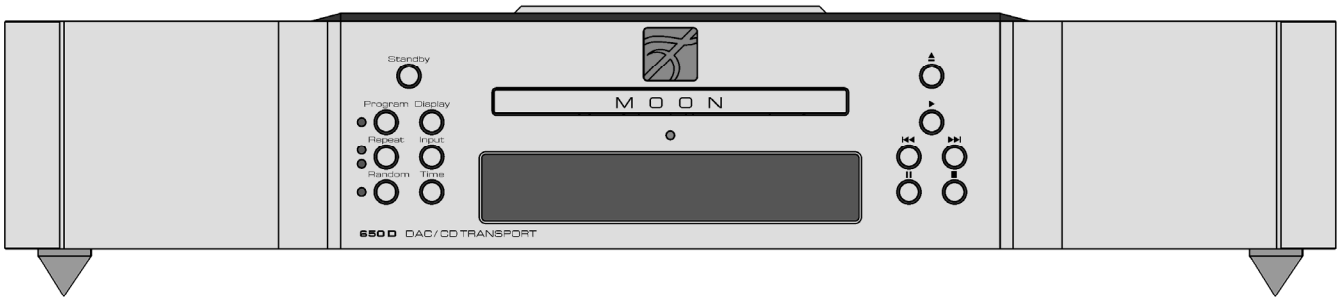

Figure 1: MOON 650D Front panel

The front panel will look similar to Figure 1 (above). The large digital display window indicates the track number of the compact disc currently playing (or the total number of tracks in stop mode) and corresponding time information.

The "Standby" button disengages the transport mechanism from the rest of the **650D's** circuitry and turns off the digital display. However, when in "Standby" mode, all digital and analog audio circuitry remains powered up to help maintain optimal performance. The blue pilot LED centrally located above the display window will no longer be illuminated when the player is in "Standby" mode.

The "Program" button allows you to program a selection of tracks in the order that you wish to listen them. After loading a compact disc into the **650D**, select the first track you wish to listen to, using the ⏮ or ⏭ buttons and then press "Program". To program a second track, select it the same way you did for the first one and press "Program" again. Repeat this operation as many times as you want to program tracks to a maximum of 30 tracks. Once you've completed programming your track selection(s), the digital display window will show the number of tracks that have been programmed and their total time. To begin playing your programmed selections, simply press the ▶ button. Pressing ■ will only suspend the playing of the programmed selection. Pressing ■ a second time will clear your program selection from the **650D's** memory. As well, opening the top drawer at any time will also clear your program. After you begin creating your program list, the LED immediately to the left of the "Program" button will illuminate and remain on until you clear your program from memory.

The "Display" button allows you to adjust the brightness of the large digital display window. It also provides you with the option of turning off the display. There are three (3) different levels of brightness; The default is medium. Pressing the "Display" button once will increase the brightness level to highest setting. Pressing the button a second time will decrease the brightness to the lowest setting. Pressing the "Display" button a third time returns the display to its default setting of medium.

Pressing the "Repeat" button once results in the entire disc being played again once it has reached the end of the final track. Pressing "Repeat" a second time will result in the track currently playing being repeated again once it has ended. To cancel this mode, simply press the "Repeat" button a third time or open the CD drawer. There are two (2) LED's located to the left of the "Repeat" button; The top one will illuminate when the current track is being repeated and both will illuminate when the entire disc is being repeated. If you have created a program of selected tracks, pressing "Repeat" once will result in your entire program repeating itself once it has completed its cycle; Pressing "Repeat" a second time will result in the current track from your program being played again once it has ended; Pressing "Repeat" a third time will terminate the "Repeat" mode.

The "Input" button is used to select an external digital source by sequentially scrolling through four (4) digital inputs: D1 uses an XLR connector for an AES/EBU digital signal; D2 uses an RCA connector for a S/PDIF digital signal; D3 uses a TosLink connector for an optical digital signal and D4 uses a USB type B connector for use with a computer equipped with a USB port and music player software such as iTunes or Winamp. Note: you cannot connect a USB flash drive or external hard drive to the "D4" input. The display window will show "D1 AES", "D2 SPDIF", "D3 TOS" and "D4 USB", depending on the input selected; Four dashes "----" will replace the input type after approximately 2 seconds. These dashes indicate that the **650D** is in the process of locking onto an external digital signal – this may take several seconds. Once the **650D** successfully locks onto the digital signal, the four dashes will be replaced by the sampling rate of this digital signal. When the signal cannot be locked onto, "----" remains in the display window. The **MOON 650D** is capable of processing an external digital input signal at one of the following six (6) different sampling rates: 44.1kHz, 48.0 kHz, 88.2kHz, 96 kHz, 176.4kHz and 192kHz.

The "Random" button, when pressed, will play each of the tracks on a compact disc in a completely random order, as opposed to the sequential order as they appear on the disc. If you have already created a program of selected tracks, it will play these programmed tracks in a random order. The LED located immediately to the left of the "Random" button will illuminate when you've engaged the random mode.

The "Time" button allows you to scroll through the four (4) different display modes for time related information. Each time you press the "Time" button, the system scrolls to the next time information mode. By default, the **650D** will display the elapsed time of the track currently playing. The scrolling order is as follows: (i) Elapsed time of the current track. (ii) Remaining time of the current track (iii) Elapsed time of the entire compact disc (or programmed tracks) (iv) Remaining time of the entire compact disc (or programmed tracks).

If you want to turn the display off, press and hold the "Display" button for 3 seconds. When the display is turned off, it will still come back on for a short period of time whenever you press any of the buttons located on the front panel or the remote control, using the brightness level that was previously established; the display will automatically turn off again once you are done. To turn the display back on, simply press and hold the "Display" button for 3 seconds. Finally, the display mode that you select will continue to be used until you either select another mode or power down the **650D** using the main power switch located on the rear panel.

To load a compact disc into the **650D**, press ▲ to open the drawer. While the drawer is opening, the word "OPENING" will appear in the display window, followed by "OPEN" when the drawer is fully open. Place the CD in the drawer with the label side facing up. To close the drawer, press ▲ again; "CLOSING" will appear in the display window followed by "LOADING" once the drawer is closed. "LOADING" indicates that the **650D** is reading the CD's table of contents. Once the CD is successfully read, the total number of tracks and total playing time will appear in the display window. As a result of various copy protection schemes, some CDs will take longer to read than others. When you load an incompatible CD (i.e. data only, SACD, DVD-A or DVD-Video), the word 'BAD DISC' will appear in the display window and the drawer will automatically open to eject this CD. **Finally, if you inadvertently leave the drawer open, it will automatically close after approximately three (3) minutes.**

Press ▶ to begin playing a compact disc. Pressing ▶ while a track is already playing will result in the current track immediately playing again, starting from the beginning. Press ⏮ to search backward or ⏭ to search forward through the compact disc's tracks. When you've located the track number, press ▶ to begin playing that track. When you initiate a forward or backward track change while a disc is already playing, it will automatically start playing the track you select; you need not press ▶.

Press ⏸ to pause the compact disc currently playing. The disc will continue spinning and the laser will be suspended in its current position. Press ⏸ a second time or ▶ to resume playing the disc. Press ■ to stop the compact disc from playing. The laser will return to the start position of the disc.

Rear Panel Connections

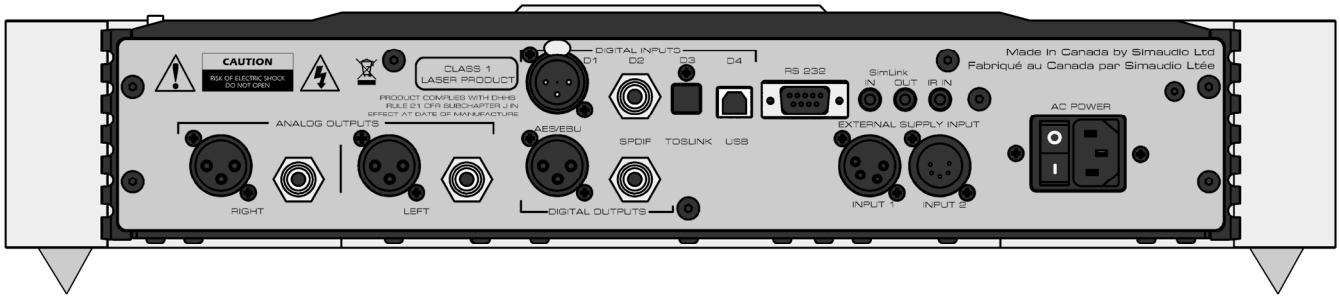

Figure 2: MOON 650D Rear panel

The rear panel will look similar to Figure 2 (above). On the left side are two pairs of analog audio outputs, labeled "Right" and "Left", each with a single-ended RCA and balanced XLR connector. Don't hesitate to use good quality interconnect cable when making the connection between the **MOON 650D** and your preamplifier or integrated amplifier. We strongly recommend that you use the balanced XLR connectors on your **650D** to maximize its level of performance.

The middle section contains two rows of connectors for digital audio. The top row has four (4) digital inputs labeled "D1" (AES/EBU), "D2" (S/PDIF), "D3" (TosLink) and "D4" (USB). The bottom row has two (2) digital outputs – one each AES/EBU and S/PDIF. When using either of the S/PDIF digital connections, you should always use a 75Ω digital audio cable terminated with RCA connectors. If you decide to use the AES/EBU digital output, use a dedicated AES/EBU 110Ω digital audio cable terminated with XLR connectors.

The right side of the rear panel has various connectors for external communications. The **MOON 650D** is equipped with full-function bi-directional RS-232 port control and status for custom integration or automation. Immediately to the right of the RS-232 port are two (2) "SimLink" connectors labeled "in" and "out" on 1/8" mini jacks. Please refer to the next section entitled SimLink for more details.

Your **MOON 650D** DAC / CD Transport has a 1/8" mini jack input for use with aftermarket infrared remote control receivers. The "IR in" connector is located immediately to the right of the "SimLink" connectors.

Directly below these communications interfaces, there are a pair of 4-pin XLR connectors labeled "External Power Supply" "Input 1" and "Input 2". These are reserved for future use when an external power supply will be made available for the **MOON 650D.**

Finally on the right side is the "AC Power" section with a main power switch ("0"=off, "1"=on) and IEC receptacle for the included AC power cord.

All rear panel connectors have been chosen because they provide the best possible connections for your unit. A poor contact will degrade the signal substantially - and plugs and sockets should all look clean and free of dirt and corrosion. The easiest way to clean them is to remove the cables from their sockets and push them back in again. This procedure requires that your **650D** and the rest of your components be completely turned off.

SimLink™

The SimLink™ provides communication features between various **MOON** components. For example, if you were to connect the **650D** DAC / CD Transport to the **600i** Integrated Amplifier via the SimLink™, pressing the ▶ (play) button on the **650D** would make the integrated amplifier automatically switch to it's designated input for the DAC / CD Transport (Please refer to the **600i** owner's manual for more information if applicable). If you were to adjust the brightness level of the large digital display window using the "Display" button on the **650D**, the brightness level of the **600i** display will automatically adjust to the same brightness level as that of the **650D**. Conversely, since the SimLink™ is a true bi-directional connection, adjusting the **600i** brightness level will automatically adjust the brightness level of the **650D**.

A third feature of SimLink™ involves the "Standby" function. By pressing down and holding the "Standby" button for 2 seconds on the **650D**, all other **MOON** components connected via the SimLink will go into "Standby" mode along with the **650D.** The same logic applies when switching from "Standby" to active mode.

The connection rules for the SimLink™ are very basic. You must always connect the supplied cable between one component's "SimLink™ Out" jack and another component's "SimLink™ In" jack. If you inadvertently connect the cable between either two "SimLink™ In" or two "SimLink™ Out" jacks, the SimLink™ communication feature will not function. Also, there is no master component in a SimLink™ chain; no one particular component operates as the main communications controller.–

When you are using your **MOON 650D** with an older MOON product such as a P-7, P-8 or i-7, you will need to update the software of the older product to allow for complete SimLink™ functionality. Contact your retailer for further details.

Operating the 650D

We recommend that you leave your **MOON 650D** DAC powered up at all times to maintain optimal performance. When you plan to be away from your home for a few days, powering off the DAC may not be a bad idea. Once fully "broken-in", please keep in mind that your **650D** will require several hours of playing time before it reaches its peak performance after you've powered it up again.

Turning on your MOON 650D for the first time

Prior to turning the DAC on for the first time, make sure that every cable is properly connected to avoid any problems. Flick the main rocker switch, located on the rear panel, labeled "POWER" to the '1' (on) position to place your **650D** in to standby mode. Next, briefly press the push button labeled "Standby" located on the front panel. You will hear a very faint click sound confirming that everything is in order. The blue LED on the front panel will illuminate, indicating that the **650D** is now powered up and ready for use.

On and Off Sequence

To avoid having any annoying noises (ie. "thumps" and "pops") emanate from your speakers when powering your **650D** on or off, you should always power up your **650D** DAC before powering up your preamplifier and/or integrated amplifier. As well, always power down your **650D** after powering down your preamplifier and/or integrated amplifier.

Remote Control Operation

Figure 3: FRM-3 Remote Control

The **MOON 650D** D-to-A Converter uses the **'FRM-3'** full function, all aluminum backlit remote control (figure 3). It operates on the Philips RC-5 communication protocol and is can be used with other MOON components such as CD Players, DAC's, Integrated Amplifiers, as well as other Preamplifiers.

The **'FRM-3'** remote uses three AAA batteries (included). To install them, use a Phillips head screwdriver #1 to remove the three screws located on the rear plate; insert the batteries in the correct direction and then screw the rear plate back into place.

To operate the **650D** with this remote control, you must first press the **CD** button located on the second row from the top.

The ⏻ power button switches the **650D** between 'Standby' and 'On' mode.

⏸	Pause the compact disc loaded into the transport
▶	Play the compact disc loaded into the transport
■	Stop playing the compact disc loaded into the transport
⏮	Press Once: Go back to the previous track on the disc
	Press and hold: Scan backward through current track
⏭	Press Once: Skip forward to the next track on the disc
	Press and hold: Scan forward through current track
0 thru 9	Direct access track number selection: Simply press the number button(s) corresponding to the track you want to play. This can be done either when another track is already playing or when the disc is stopped.

The **Input ▲** and **Input ▼** buttons allow you to sequentially scroll, forward or backward, through each of the **650D**'s four (4) digital inputs - "D1", "D2", "D3" and "D4" - and the internal CD transport (as opposed to the 'Input' button located on the **650D**'s front panel which only allows for forward scrolling).

The **"Time", "Disp"** "**Rnd"**, "**Rpt"** and "**Prog"** buttons perform the identical functions to their corresponding button located on the **650D's** front panel. Please refer to pages 7 and 8 for a more detailed description of each one.

Backlight Function

Your **FRM-3** features a backlight capability that allows you to effortlessly operate this remote control in a darkened environment. Since battery lifespan is substantially reduced when the backlighting feature is activated, the **FRM-3** includes 3 different operational modes to help preserve battery life:

Default Mode (#1): The backlight is triggered on by either moving the remote control (via an internal motion detector) or by pressing any button on the remote's keypad; The backlight will remain illuminated for a full five (5) seconds after the last event (motion or pressed button). To activate the "Default Mode", press and hold the "CD" button for three (3) seconds. The backlight will illuminate once, very briefly for confirmation.

Button Mode (#2): The backlight is triggered ONLY by pressing any button on the remote's keypad - the internal motion detector is deactivated; The backlight will remain illuminated for a full five (5) seconds after the last button is pressed. To activate the "Button Mode", press and hold the "AMP" button for three (3) seconds. The backlight will illuminate twice, very briefly for confirmation.

Off Mode (#3): The backlight feature is completely disabled. To activate the "Off Mode", press and hold the "DAC" button for three (3) seconds. The backlight will illuminate three times, very briefly for confirmation.

Remote operation with multiple MOON components

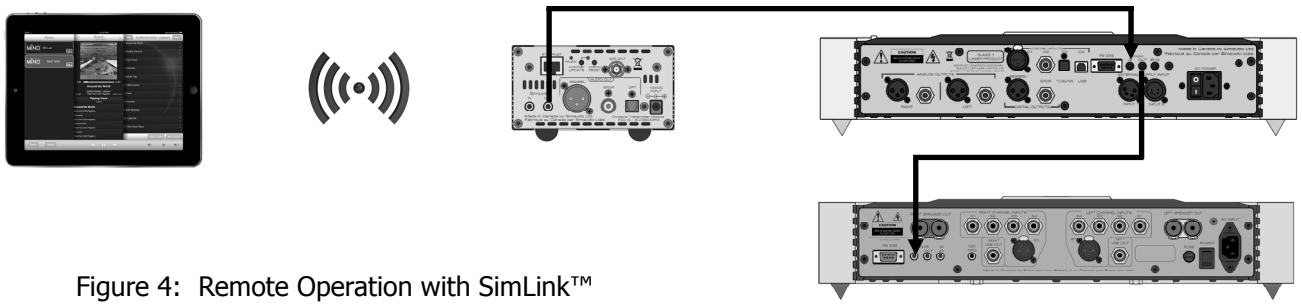

Figure 4: Remote Operation with SimLink™

In figure 4 we have a **180 MiND** Music Streamer connected to a **650D** DAC via their respective SimLink™ ports (using a 1/8" mini-jack cable), and the **650D** connected to a **600i** Integrated Amplifier also via their respective SimLink™ ports. When you launch the MiND App on your Apple smart device (full list on the MiND page of our website) and select this system's ZONE, the **180 MiND** will turn on, as will the **650D** and **600i**; The **600i** will automatically switch to its "MiND" assigned input. To shut down the system, press "Off" for this ZONE in the MiND app.

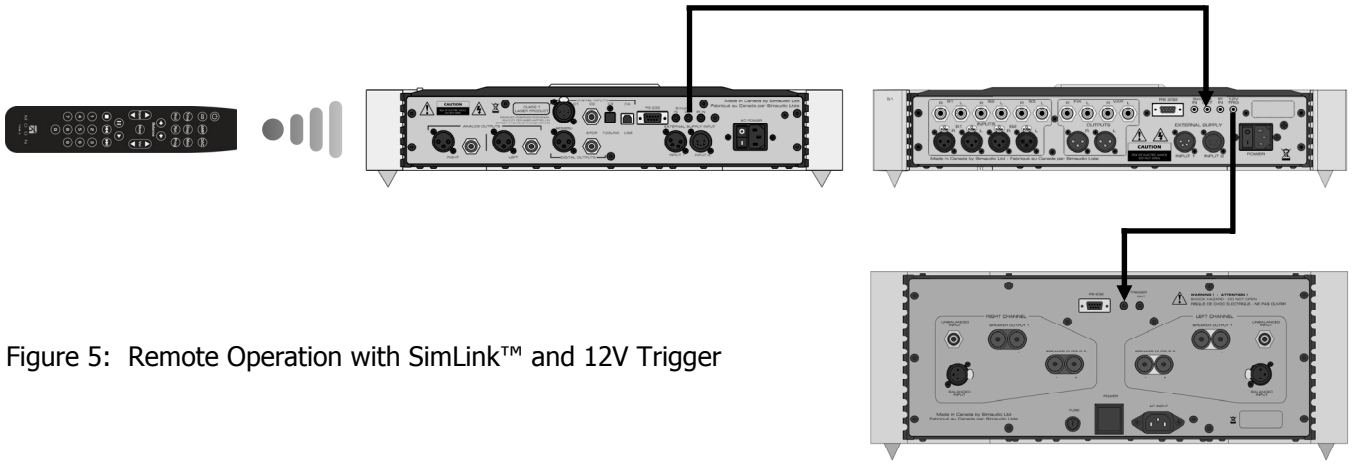

Figure 5: Remote Operation with SimLink™ and 12V Trigger

In figure 5 we have a **650D** DAC connected to a **740P** Preamplifier via their respective SimLink™ ports (using a 1/8" mini-jack cable), and the **740P** is connected to a **870A** Amplifier via their respective 12V triggers (also using a 1/8" mini-jack cable). When you turn on the **650D** via remote control (or its Standby button), both the **740P** and **870A** will turn on automatically. The same rule applies when you put the **650D** into Standby mode.

Balanced Operation

When using an unbalanced interconnect, the audio signal runs through both the center wire and the shield/ground wire. Any noise picked up by this interconnect (ie. nearby magnetic fields such as an AC power cord) will be reproduced by both the preamplifier and amplifier, then heard through the loudspeakers. Conversely, a balanced interconnect has three separate conductors; one for the ground and two for the actual signal. These two signals are identical except that one is 180 degrees out of phase with the other. For example, when one conductor is carrying a signal of +4 Volts, the other will be carrying a signal of –4 Volts. When these two inverted signals on a balanced line are output from the **MOON 650D**, any noise picked up by the interconnect will be eliminated since a differential circuit amplifies only the difference between these two signals: Noise on a balanced interconnect will be equal on both conductors and therefore cancel out.

Specifications

Configuration	Fully balanced, dual-mono
Digital Power Supply Transformer	25VA
Analog Power Supply Transformer	10VA
Digital Power Supply Capacitance	17,600µF
Analog Power Supply Capacitance	8,800µF
Transport Mechanism	Proprietary Design
Digital Filter / Digital-to-Analog Converters	ESS ES9016 Sabre^{32} 32-bit Hyperstream™
Frequency Response (audible)	20Hz - 20kHz +0/-0.1dB (nternal CD transport)
Frequency Response (full range)	2Hz - 100kHz +0/-3dB (external digital source)
THD @1kHz, 0dBFS (A-weighted)	< 0.0001%
Intermodulation Distortion	< 0.0001%
Dynamic Range	> 120dB
Signal-to-noise Ratio	> 120dB @ full output
Slew Rate	50V/µs
Channel Separation	> 116dB
Low Level Linearity	< ±0.25dB at -90dBFS
Intrinsic Jitter	1 picosecond RMS
Analog Outputs – Balanced	1 pair XLR
Max. Analog Output @ 0dBFS - XLR	2.0 Volts
Analog Output Impedance - XLR	100Ω
Analog Outputs – Single Ended	1 pair RCA
Analog Output Impedance - RCA	100Ω
Max. Analog Output @ 0dBFS - RCA	2.0 Volts
Bit-depth range / Sampling Frequency	16 to 24 bits / 44.1kHz to 192kHz
Digital Inputs (4)	AES/EBU (XLR), S/PDIF (RCA), TosLink, USB
Digital Outputs (2)	S/PDIF (RCA), AES/EBU (XLR)
Digital Input/ Output Impedance - S/PDIF	75Ω (0.5 Volts p-p)
Digital Input/ Output Impedance - AES/EBU	110Ω (3.7 Volts p-p)
Remote Control	All Aluminum Full-Function
Display Type	8 character dot matrix LED
Power Consumption @ idle	25 Watts
AC Power Requirements	120V / 60Hz or 240V / 50Hz
Shipping Weight	35 lbs / 16 Kgs
Dimensions (W x H x D, inches)	18.75 x 4.0 x 16.81

Balanced Pin Assignment:

Pin 1	Ground
Pin 2	Positive
Pin 3	Negative

NOTE: If you require the RS-232 codes for your **650D**, please visit the "Contact Us" page and complete the "Information request" form on our website at www.simaudio.com.

Fuse Replacement: For the 120V version use a 0.2A slow blow (5 x 20mm size).
For the 230V version use a 0.1A slow blow (5 x 20mm size).